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## Awareness and perception of Al-Baha population for eye health and its common disorders

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**ABSTRACT**

**Introduction:** The research is directed to assess the knowledge and perception of the Al-Baha population regarding eye health and its common disorders and risk factors such as high altitude, contact lenses, pregnancy, drugs and ultraviolet. **Methods:** Cross-sectional study was implemented in the high-altitude region of Al-Baha. The data collection of the present research was based on the Google Survey forms for gathering the responses. The predesigned survey questionnaire (Google form) was shared with the general population. For data analysis, the data were transformed into codes and with the help of software named SPSS, the data were analyzed. It was assured that the data was valid and reliable with the help of the reliability and validity test (a Cronbach = 0.949 and Validity = 0.974). **Results:** The results showed that the awareness level of the participants about the contact lens and UV rays was relatively higher, as 64.2% of participants were aware of the contact lens as a risk factor. However, the awareness regarding altitude and pregnancy is low, which accounted 19.9 % and 10% of the total respondents. **Conclusion:** The participants show different levels of knowledge regarding eye health concerning the effect of contact lenses and UV and high altitude and pregnancy.

**Keywords:** Al-Baha population, eye health, knowledge, contact lens, ultraviolet, high altitude, pregnancy.

**1. INTRODUCTION**

A crucial aspect of total health is the health of the eyes. It provides a chance to identify and diagnose numerous systemic disorders with recognizable

ophthalmologic manifestations, such as diabetes mellitus, hypertension and autoimmune diseases (Cho, 2016; Klig, 2008; Paovicet al., 2013). Geographical factors that affect the eyes include high altitudes that result in high altitude retinopathy, changes in corneal thickness, photokeratitis, pterygium, cataracts and dry eye syndrome (Jha, 2012). The general public's awareness of eye health and prevalent eye diseases is crucial for preventing and treating eye health problems, which helps prevent complications from eye disease and reduce visual impairment (Dandona et al., 1999). As a high-altitude region with recognized endemic diseases, including diabetes mellitus and hypertension, Al-Baha is crucial for assessing the population's knowledge and awareness of eye health and related issues (Alghamdi, 2016). Due to its relationship with most other health conditions and the rarity of such research study, locally and globally, we experience the field of eye health care (Haddad et al., 2017). Studies on population awareness of common eye diseases have not been undertaken in the Al-Baha region; however, one study was conducted in the Hail region, which found that 46% of respondents were generally aware of a variety of eye conditions, such as dry eyes, diabetic retinopathy, glaucoma and cataracts (Alshammari et al., 2021).

### General Population

The goal of a population eye health strategy is to focus on connected conditions and causes that impact the population's health throughout a lifetime, identify systemic changes in underlying patterns of incidence and apply the resultant knowledge to develop and execute policies and measures to promote the health and wellbeing of communities, individual characteristics, behaviors, culture, relatives, community organizations living and working conditions and general cultural, financial and social. Well-being and environmental factors all of which are components of bigger physical and social environments among the many determinants that affect the health of the general population. Health care services are an essential part of the working and living environments that influence health (Teutsch et al., 2022). According to eye health professionals, the great majority of factors reside outside the medical care systems of delivery, which offers a variety of possibilities and circumstances to affect eye and visual health (Dandona et al., 1999). As part of a comprehensive population health approach to promote eye and vision health, numerous health determinations impact eye and vision health (Teutsch et al., 2022). These facts demonstrate the importance of the eye health of the general population.

### Effect of high altitude on the eyes

The definition of high altitude starts at 8000 ft (2400 m) beyond sea level, and medicine is aware that humans begin to experience effects at altitudes exceeding 4900 ft (1500 m). Low air pressure, which causes a decrease in oxygen partial pressure (PO<sub>2</sub>), reduced humidity and temperature and increased sun ultraviolet (UV) radiation, make up the primary environment at high altitudes. The effects of high altitude on the eyes are both immediate and long term (Xie and Wang, 2022). Some of the immediate impacts are high altitude retinopathy, increased corneal thickness and photokeratitis. While pterygium, cataracts and dry eye conditions are long term complications associated with high altitudes. However, mild high-altitude retinopathy has little effect on vision but is a good indicator of high-altitude cerebral edema development. Both eyes with radial keratotomy and eyes with LASIK experience refractive changes due to variations in corneal thickness at altitude. High altitude visual acuity and contrast sensitivity are not negatively impacted, although scotopic vision may be if additional oxygen is not utilized (Jha, 2012). These effects show the impact of high altitude on the eyes.

### Effects of drugs on the eyes

Drugs might directly harm the eyes' cells. After topical treatment of de epithelialized corneas, phenylephrine has been found to exert direct cytotoxic effects on the rabbit corneal endothelium (Green, 2022). Diamox has been widely used to decrease the rate of aqueous humor development. It is a carbonic anhydrase inhibitor that is used in the treatment of glaucoma. One of the side effects of this drug on the eyes includes acute transient myopia, which occurs at a very low incidence rate. The systemic side effects of Diamox include paresthesias, malaise syndrome with digestive distress and uric acid accumulation. Glacial acetic acid was also found to be causing injury when applied to the eyes, after accidental application of acetic acid followed by water caused corneal opacification. However, the corneal epithelium took many months to regenerate, but the corneal anesthesia and opacity were permanent side effects. Deep corneal damage has been seen when there is prolonged contact of liquid acetone with the eyes of the human (Grant, 1962). All these effects show the impact of different drugs on animals' eyes, especially humans.

### Effect of contact lenses on the eyes

Despite the money invested in the advancement of contact lens technology, an estimated 140 million people worldwide use contacts to correct refractive errors. It has been noted that 10-15% of contact lens users discontinue usage of the lens after three years; contact

lens discomfort (CLD) is the most claimed explanation, which occurs most frequently in the case of 70% of users. The most common symptom among those noted is the sensation of dry eyes; about 40% of soft contact lens users reported dry eyes sensation and 25% suffered from acute to chronic symptoms, due to which wearing of contact lens time is reduced. Medical symptoms associated with contact lens discomfort (CLD) include conjunctival staining, meibomian gland dysfunction, conjunctival epithelial flap formation, Demodex blepharitis, conjunctival indentation and lid wiper epitheliopathy. However, at the cell level, reduced densities of goblet cells and conjunctival metaplasia have been connected to CLD (Markoulli and Kolanu, 2017). All these factors indicate the impact of contact lens usage on the human eyes.

### Care of eyes during pregnancy

During pregnancy, ocular changes are frequent. There are some serious pathologies that develop, worsen or even resolve throughout the course of pregnancy that requires prompt diagnosis and management, even though the majority of these are benign physiologic reactions to the metabolic, hormonal and immunologic modifications to adopt the conceptional product. About 15% of changes induced by the pregnancy are benign and very limited pathologic conditions cause an effect on the eyes of pregnant women. However, changes in ocular state are largely linked to the health conditions of the pregnant female. If she is suffering from diabetes or high blood pressure, severe ocular changes can occur. The eye structures that are affected by pregnancy include the cornea, lens, retina, conjunctiva, optic nerve and orbit of the eye. Ocular changes associated with diabetic and hypertensive pregnancy may worsen due to conception and correlates with eclampsia and gestational diabetes mellitus (Naderan, 2018). So, care for the eyes is very important for pregnant women, especially for those who are already dealing with diabetes and high blood pressure.

### Effects of ultraviolet on the eyes

The organ most at risk of exposure and harmful effects of ultraviolet are the eyes and skin. Ultraviolet cause damage to the cornea of the eyes and cause acute burn reactions known as photokeratitis. Photokeratitis patients show no signs and symptoms immediately until various hours of post UVR exposure. The initial symptoms include gritty retinal sensation, followed by tearing and photophobia. Additionally, many studies have confirmed that chronic exposure to ultraviolet cause's climatic droplet keratopathy (CDR), which occurs when plasma soluble proteins react with ultraviolet light in the presence of photochemicals. CDR shows increased changes in the morphology and density of the cornea (Delic et al., 2017). These ultraviolet radiation effects pose serious challenges to the human eye.

### Aims and Objectives

The aim of the present study was to assess the knowledge and perception of the Al Baha population of common eye disorders while the specific objectives included:

To assess the extent of awareness of the Al Baha population for specific eye diseases and their types, causes, risk factors and management models.

To know the awareness of the Al Baha population for the effect of high altitude, drugs, contact lens usage, pregnancy and ultraviolet on the health of the eyes.

To measure the gap and deficiency areas of the Al Baha population for certain disorders of the eyes.

## 2. METHODOLOGY

### Ethical considerations

The study was designed in such a way it fulfilled all the ethical considerations. The present research gets approval from the Research Ethical Committee of the Faculty of Medicine, Al Baha University, under approval number (REC/SUR/BU-FM/2022/8). Furthermore, it was assured that not to violate the privacy of the participants.

### Study design and sampling

The present research focused on both male and female medical students for attaining the responses, as the study design was based on cross sectional data. The study did not include the response of any students either who did not fulfill the basic criteria of the study or did not want to share their views regarding the research study. Furthermore, the present research was based on convenience sampling.

### Data collection

The data collection of the present research was based on advanced mediums as the Google Survey form was used for gathering the responses. The pre designed survey questionnaire (Google form) was shared with medical students and community between periods of January 2022 to May 2022. The main aim of the questionnaire was to understand and know about the fundamental characteristic of participants and their awareness regarding eye health and common eye diseases.

### Data analysis

Analysis of the data plays a vital role in the attainment of the final outcomes. The data were transformed into codes and with the help of a software named SPSS, the data were analyzed the data. First of all, it was assured that the data was valid and reliable with the help of the reliability and validity test (Cronbach = 0.949 and Validity = 0.974). The descriptive data facilitated the illustration of the variables and participants' characteristics. Furthermore, the logistic regression test assisted in knowing the relationship between the variables.

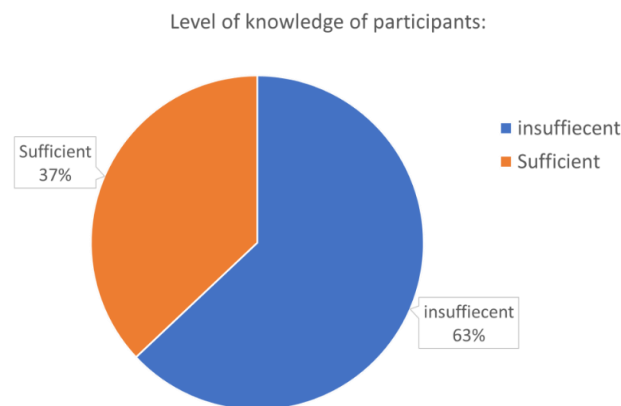
## 3. RESULTS

### Demographic Characteristics

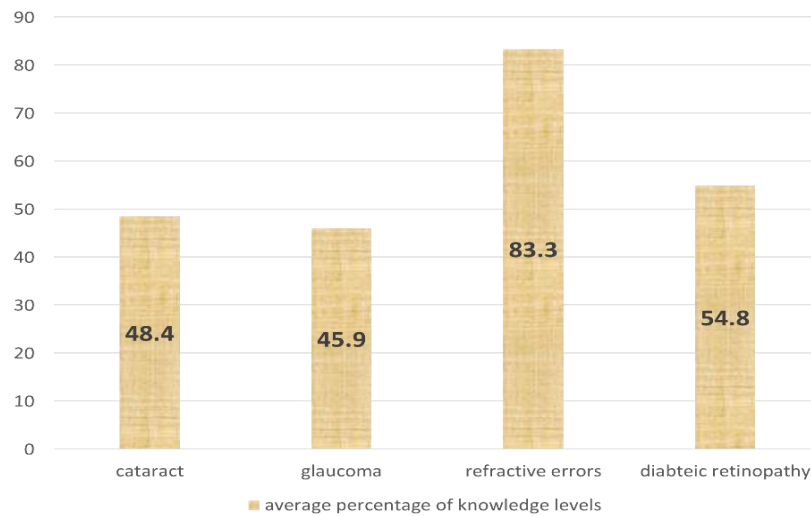
Demographic characteristics of the collected data indicated that the overall population size of the data was around 438 (n=438). The majority of the participants were male (66.4%). However, the participation of the females (33.6%) was also satisfactory. The participants (Students) were also divided into six different groups based on their academic qualifications. The descriptive data indicated that most of the participants were university students (67%). The rest of the participants had an education level of high school (21%), postgraduate (6%), Secondary (3%), Diploma (2%) and primary (1%). Moreover, most of the participants were young, as the participants with the age bracket of 18-39 years were 51%. However, 43% of the participants were aged between 40-60 years. Furthermore, the majority of respondents (70%) were involved in eye diseases; instead of this, almost 87.4 % of participants of this study did not attend any event regarding eye health awareness.

### Participant's knowledge of eye diseases

The presented data indicated that the level of knowledge of the participants was inefficient as 63% of the participants were not aware of the common eye disease, as represented in Figure 1. Cataracts, Glaucoma, Refractive errors and Diabetic retinopathy are common eye diseases. The average awareness of participants regarding these diseases accounted for 48.4%, 45.9%, 83.3% and 54.8% respectively as shown in Figure 2.



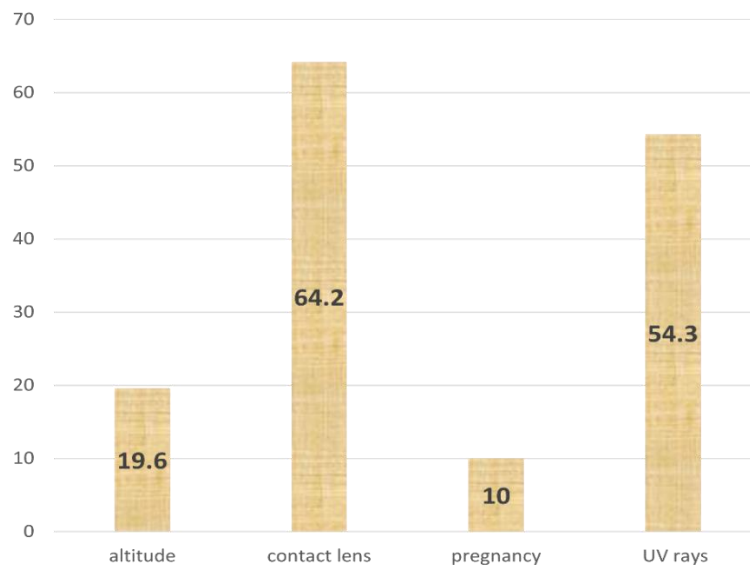
**Figure 1** Patient's Knowledge of Common Eye Diseases



**Figure 2** Average Percentage of Knowledge Levels Regarding Risk Factors Related To Eye Health

#### Participant's Awareness level regarding risk factors related to eye health

The awareness level of the participants about the contact lens and UV rays was relatively higher, as 64.2% of participants were aware of the contact lens as a risk factor. However, there was a lower level of awareness among the participants regarding altitude and pregnancy, which accounted for 19.9 % and 10% of the total respondents, which is represented below in Figure 3.



**Figure 3** Awareness Regarding Risk Factors Related to Eye Health

#### Awareness of the Participants regarding cataract disease

The findings of the study (table 1) indicated that the majority of the male (151 out of 291) and females (75 out of 147) were not aware of the cataract disease. Most of the participants (222) of the respondent's ages were between 18 to 39 years old, but still, most of them did not have knowledge of this disease. This was just because of the lack of people's interest in attending health awareness events. Hence, the findings depicted eye health awareness event has the potential to increase the knowledge about this disease.

**Table 1** Demographics and Awareness about Cataracts

	N (%)	Yes	No	P value
Gender				
Male	291(66.4)	140	151	0.86

Female	147(33.6)	72	75	
Age				
Less than 17 y	13(3)	6	7	0.39
18-39 y	222(50.7)	103	119	
40-59 y	190(43.4)	99	91	
More than 60 y	13(3)	4	9	
Educational level				
Primary school	6(1.3)	3	3	0.2
Secondary school	11(2.5)	4	7	
High school	91 (20.7)	52	39	
Diploma/ institute	7 (1.6)	1	6	
University	295 (67.4)	142	153	
Postgraduate	28 (6.4)	10	18	
Marital status				
Single	115(26.3)	55(49.5)	56	0.63
Married	319 (72.8)	156(48.3)	167	
Divorced	4 (1)	1(25)	3	
Do you attend events about eye health?				
Yes	55 (12.6)	38	17	0.001*
No	383 (87.4)	174	209	

### Participants' awareness regarding glaucoma

The findings of the present study (Table 2) showed that males (n=130) had a relatively higher level of awareness regarding the Glaucoma disease than females. But still, the majority of the participants did not know about Glaucoma. It was found that education level had a significant relationship with the awareness of this eye disease as there was a higher number of university students who knew about the signs and effects of glaucoma. But still, there is a need for awareness either through events or social campaigns.

**Table 2** Participant's Awareness Regarding Glaucoma

	N (%)	Yes	No	P value
Gender				
Male	291(66.4)	130	161	0.47
Female	147(33.6)	71	76	
Age				
Less than 17 y	13(3)	5	8	0.43
18-39 y	222(50.7)	98	124	
40-59 y	190(43.4)	94	96	
More than 60 y	13(3)	4	9	
Educational level				
Primary school	6(1.3)	1	5	0.04*
Secondary school	11(2.5)	6	5	
High school	91(20.7)	44	47	
Diploma/institute	7 (1.6)	1	6	
University	295(67.4)	141	154	
Postgraduate	28 (6.4)	8	20	

Marital status				
Single	115(26.3)	47	64	0.46
Married	319(72.8)	153	170	
Divorced	4 (1)	1	3	
Do you attend events about eye health?				
Yes	55 (12.6)	35	20	0.005*
No	383(87.4)	166	217	

### Awareness of respondents about Refractive errors

The participant's responses were relatively satisfactory as the majority of males (n=237) and females (n=128) had appropriate knowledge about this disease when asked whether they were aware of the refractive errors disease or not. Specifically, graduates (n=242/295) and postgraduates (n =24/28) students had a higher level of awareness. The majority of these respondents used to attend eye health awareness events which increased their awareness regarding Refractive errors (Table 3).

**Table 3** Refractive Errors

	N (%)	Yes	No	P value
Gender				
Male	291(66.4)	237	54	0.14
Female	147(33.6)	128	19	
Age				
Less than 17 y	13(3)	10	3	0.1
18-39 y	222(50.7)	179	43	
40-59 y	190(43.4)	167	23	
More than 60 y	13(3)	9	4	
Educational level				
Primary school	6(1.3)	4	2	0.17
Secondary school	11(2.5)	11	0	
High school	91 20.7)	80	11	
Diploma/institute	7 (1.6)	4	3	
University	295 (67.4)	242	53	
Postgraduate	28 (6.4)	24	4	
Marital status				
Single	115(26.3)	87	24	0.23
Married	319(72.8)	275	48	
Divorced	4 (1)	3	1	
Do you attend events about eye health?				
Yes	55 (12.6)	48	7	0.4
No	383(87.4)	317	66	

### Awareness of participants regarding diabetic retinopathy

The findings of the study expressed that there was a greater number of responses in favor of the study as they knew about diabetic retinopathy. Most of the males (n=149) and females (n=91) had proper awareness regarding diabetic retinopathy. It was found that the age of the participants also significantly correlated with the awareness of diabetic retinopathy as the higher the age of the participants added more knowledge regarding this eye disease. Furthermore, in response to the question to participants, either do you attend the eye health awareness events or not? It was found that most participants did not prefer to participate in these types of events. But still, they knew about the consequences of Diabetic retinopathy.



**Table 4** Diabetic Retinopathy

	N (%)	Yes	No	P value
Gender				
Male	291(66.4)	149	142	0.034*
Female	147(33.6)	91	56	
Age				
Less than 17 y	13(3)	5	8	0.05
18-39 y	222(50.7)	110	112	
40-59 y	190(43.4)	117	73	
More than 60 y	13(3)	8	5	
Educational level				
Primary school	6(1.3)	4	2	0.2
Secondary school	11(2.5)	7	4	
High school	91 (20.7)	51	40	
Diploma/ institute	7 (1.6)	1	6	
University	295 (67.4)	164	131	
Postgraduate	28 (6.4)	13	15	
Marital status				
Single	115(26.3)	53	58	0.27
Married	319 (72.8)	185	138	
Divorced	4 (1)	2	2	
Do you attend events about eye health?				
Yes	55 (12.6)	40	15	0.004*
No	383 (87.4)	200	183	

## 4. DISCUSSION

The aim of the assessment of the perception and awareness of the population eye health strategy is to emphasis on interrelated conditions and causes that influence the population's health throughout a life span, ascertain systemic changes in underlying patterns of incidence and apply the resultant knowledge to develop and execute policies and measures to promote the health and wellbeing of communities. The study finding revealed a high prominence of the male population 151 out of 291 with a p value of 0.86. The findings revealed males had a relatively higher level of awareness regarding the Glaucoma disease than females. According to Cho (2016), Klig (2008) and Paovic et al., (2013) eyes' health is a crucial aspect of the total health of a person, as it provides an offer to the early identification and diagnosis of various systemic disorders with characteristic manifestations, including Type 2 diabetes which is caused by diabetic retinopathy, high blood pressure due to irregular heartbeats, vision alterations and several autoimmune diseases. Dandona et al., (1999) showed that the public's general knowledge regarding eye diseases and eye health is significantly important for preventing and treating prevalent eye disorders, which helps prevent complications such as diabetes and hypertension from eye disease and decreased impairment of the eyes. So, the general aim of the contemporary study is to assess the knowledge and perception of the Al Baha population of common eye disorders. Alghamdi, (2016) claimed that as a high-altitude region with recognized endemic diseases, including diabetes mellitus and hypertension, Al-Baha is crucial for assessing the population's knowledge and awareness of eye health and related issues. According to Teutsch et al., (2022) the goal of a population eye health strategy is to focus on connected conditions and causes that impact the population's health throughout a lifetime. Identify systemic changes in underlying patterns of incidence and apply the resultant knowledge to develop and execute policies and measures to promote the health and wellbeing of communities.

Individual characteristics, behaviors, culture, relatives, community organizations living and working conditions and general cultural, financial and social. Wellbeing and environmental factors are components of bigger physical and social environments among the many determinants that affect the general population's health. Health care services and the studies conducted to check the general population's knowledge is essential parts of the working and living environments that influence the health of the eyes of



the public. Studies on population awareness of common eye diseases have not been undertaken in the Al-Baha region. So, in the current study, the level of knowledge of participants regarding the common eye diseases was measured to assess the extent of awareness of the Al Baha population for specific eye diseases and their types, causes, risk factors and management models, which showed that 63% participants have insufficient knowledge about common retinal maladies. In comparison, only 37% have sufficient knowledge about common visual impairments as only 12.6% showed positive responses, while 87.4% of people showed a negative response. Either they are busy or not interested in the eye health awareness events. When asked if they have any ocular disorder, an interesting 70% claimed that they are suffering from retinal disease, while 30% are safe from it. These results showed the irresponsive behavior of the people of AL-Baha. They greatly suffer from an ocular disease but are less interested in preventive and diagnostic events regarding ocular health and prevention.

Jha, (2012) claimed that certain geographical factors affect the eyes, including high altitudes that result in high altitude retinopathy, changes in corneal thickness, photokeratitis, pterygium, cataracts and dry eye syndrome. In the contemporary study, the average percentage of knowledge regarding general eye disorders among the participants was also measured, which shows that an average of 48.4% of participants know about cataracts. In comparison, 45.9% of participants knew about glaucoma, 54.8% of participants showed that they knew about diabetic retinopathy and the highest average percentage of 83.3 % of participants showed that they knew about the refractive errors caused by high altitude. A study conducted by Dandona et al., (1999) showed that various healthcare professionals had demonstrated the great majority of risk factors, including high altitudes, use of contact lenses, pregnancy, drugs and ultraviolet radiation, reside outside the medical care systems of delivery, which offers a variety of possibilities and circumstances to affect the eye and visual health. Teutsch et al., (2022) asserted that as part of a comprehensive population health approach to promote eye and vision health, numerous health determinations impact eye and vision health. The present study also surveyed to know the awareness of the Al Baha population for the effect of high altitude, contact lens usage, pregnancy and ultraviolet on the health of the eyes and to measure the gap and deficiency areas of the Al Baha population for certain disorders of the eyes.

The lowest, only 10% general population, know about pregnancy that affects visual health. Previous studies showed that during pregnancy, ocular changes are frequent. According to Naderan, (2018) some serious pathologies develop during this period, even though most of these are benign physiologic reactions to the metabolic, hormonal and immunologic modifications to adopt the conceptional product. About 15% of changes induced by the pregnancy are benign and very limited pathologic conditions cause to affect the eyes of the pregnant women. However, alterations in the ocular state are largely linked to the health conditions of the pregnant female. If she has diabetes or high blood pressure, severe ocular changes can occur. The eye structures affected by pregnancy include the cornea, lens, retina, conjunctiva, optic nerve and eye orbit. Ocular changes associated with diabetic and hypertensive pregnancy may worsen due to conception and correlates with eclampsia and gestational diabetes mellitus. So, eye care is very important for pregnant women, especially those already dealing with diabetes and high blood pressure. Naderan, (2018) attention towards customized therapy or prevention approach due to obstetric ophthalmology, which is the differentiation of pathological eye illness physiological ocular alterations and the ocular advantages of treatment for the mother should always be weighed against any potential risks to the fetus in this personalized approach.

Another risk factor of high altitude also causes ocular alterations Jha and Kirti, (2012) provide a definition of high altitude, which starts at 8000 ft (2400 m) beyond sea level and medical science is aware that humans begin to experience effects at altitudes exceeding 4900 ft (1500 m). Low air pressure, which causes a decrease in oxygen partial pressure (PO<sub>2</sub>), reduced humidity and temperature and increased sun ultraviolet (UV) radiation, make up the primary environment at high altitudes. These effects of high altitude on the eyes are both immediate and long term. Xie and Wang (2022) showed that some immediate impacts on retinal health are highaltitude retinopathy (HAR), increased corneal thickness and photokeratitis. While pterygium, cataracts and dry eye conditions are longterm complications associated with high altitudes. However, mild high-altitude retinopathy has little effect on the person's vision but is a good indicator of high-altitude cerebral edema development.

According to a potential disruption of the ocular vascular system if blamed for alterations in HAR with the rise of all hemodynamic variables, mountaineers with HAR had ocular vascular dysregulation. Even so, a different investigation on the autoregulation of choroidal and retinal flow under growing hypoxia at high altitudes found the combined effect of all the adaptive mechanisms in the retina and choroid led to the stable oxygen delivery to the retina and choroid. A study by Jha, (2012) stated that high altitude visual acuity and contrast sensitivity are not negatively impacted, although scotopic vision may be if additional oxygen is not utilized. These effects show the impact of high altitude on the eyes and knowledge of it is crucial to prevent and treat ocular disorders. In the context of high altitude, about 19.6% of the average population showed that they know about this risk factor associated with vision impairment.

The third risk factor regarding visual health is ultraviolet radiation, which causes damage to the cornea of the eyes and causes acute burn reactions known as photokeratitis. According to Delic et al., (2017) photokeratitis patients show no signs and symptoms immediately until various hours of post UVR exposure. The initial symptoms include gritty retinal sensation, followed by tearing and photophobia. Additionally, many studies have confirmed that chronic exposure to ultraviolet cause's climatic droplet keratopathy (CDR), which occurs when plasma soluble proteins react with ultraviolet light in the presence of photo chemicals. CDR shows increased changes in the morphology and density of the cornea. And low levels of UVR are needed to cause a corneal response, and persistent UVR stimulation will lead to clinical illness. UVR protective eyewear always is worn outside due to increased reflectance and scattering on cloudy days and in environments with highly reflective surfaces. About an average of 54.3% know about the effect of ultraviolet rays that pose serious challenges to ocular health. The fourth risk factor associated with vision health included using contact lenses. An estimated 140 million people worldwide use contacts to correct refractive errors as an alternative for prescriptive spectacles.

A previous study by Markoulli and Kolanu, (2017) showed that 10-15% of contact lens users discontinue usage of the lens after three years; despite the money invested in the advancement of contact lens technology, contact lens discomfort (CLD) is the most claimed explanation, which occurs most frequently in the case of 70% of users. The most common symptom among those noted is the sensation of dry eyes; about 40% of soft contact lens users reported dry eyes sensation and 25% suffered from acute to chronic symptoms, due to which wearing of contact lens time is reduced. Medical symptoms associated with contact lens discomfort (CLD) include conjunctival staining, meibomian gland dysfunction, conjunctival epithelial flap formation, Demodex blepharitis, conjunctival indentation and lid wiper epitheliopathy. However, at the cell level, reduced densities of goblet cells and conjunctival metaplasia have been connected to CLD. The contemporary study's results showed that about 64.2% general population knows about this risk factor of contact lens usage and it is the highest average percentage among other risk factors of knowledge. Markoulli and Kolanu, (2017) suggest that the contact lens industry can employ lubricin or other strategies to minimize the friction between the contact lens and ocular surface. CLD must be treated using an evidence-based approach.

According to Green, (2022) drugs might directly harm the eyes' cells and cause retinal toxicity. Phenylephrine has been demonstrated to have direct cytotoxic effects on the corneal endothelium following topical therapy of de epithelialized corneas. The Grant claimed that Diamox was widely used to decrease the development rate of aqueous humor. Diamox is a carbonic anhydrase inhibitor that is used in the treatment of glaucoma and one of its side effects is on the eyes, acute transient myopia, which occurs at a very low incidence rate (Grant, 1962). The systemic side effects of Diamox include paresthesia malaise syndrome, which occurs along with uric acid accumulation and digestive distress. Glacial acetic acid is another drug that has to be causing injury when applied to the eyes accidentally, after its accidental application, followed by water caused corneal opacification. It is seen that the corneal epithelium took many months to regenerate, but the corneal anesthesia and opacity were permanent side effects. It is concluded that general knowledge and perception of eye health and its common associated disorders and risk factors are very important for the high-altitude Al-Baha region's population.

## 5. CONCLUSION & RECOMMENDATION

The condition of the eyes is essential to overall health. It offers a chance to recognize and classify a variety of systemic illnesses with observable ophthalmologic signs. High altitudes, which cause high-altitude retinopathy (HAR), changes in corneal thickness, cause cataracts and dry eye syndrome, are just a few examples of topographic factors that impact the eyes. The general population needs to be informed of ocular health and common ocular disorders to prevent eye issues, which help reduce visual impairment and prevent complications from diseases. Al-Baha is significant because it is a high-altitude area with documented endemic disorders, such as high blood pressure and Type 2 Diabetes. The contemporary study encounters the field of eye health care because of its connection to most other medical diseases and the scarcity of such research studies in the Al-Baha region and outside of it. The present study surveyed to access the general Al-Baha's population awareness and perception regarding the prevalent eye diseases and the common disorders associated with them.

The contemporary study found that the awareness and perception of the Al-Baha population about ocular health and its common disorders and risk factors are not significant. More than half of the Al-Baha population is suffering from eye diseases. Even then, they are reluctant to attend awareness events on retinal health. The level of knowledge regarding ocular health is not significant among them; more than half of the people lack sufficient information about the eyes' health and its preventive measures. However, the highest average percentage of knowledge levels regarding the common eye diseases among the participants is about refractive errors and the lowest is about glaucoma. More than half of the Al-Baha population knows that diabetic retinopathy could be the associated disorder, while nearly half know about cataracts. The study also surveyed the average percentage of knowledge

levels regarding the risk factors associated with the eyes' health. The results showed that the majority know that contact lens usage is a risk factor that impacts the eyes and the lowest numbers of people know that pregnancy also impacts ocular health. More than half of the population knows about the UV radiation risk factor. In comparison, less than half of the population has some knowledge about high altitude that causes high altitude retinopathy. So, it is concluded that Al-Baha people have little knowledge and awareness about the eye health and it is important to conduct more awareness campaigns and compel people to attend these to spread alertness regarding eye diseases and their associated prevalent disorders in the region. Thus, it is recommended to generate awareness regarding the eye diseases across community levels to promote safety and efficacy towards better eye health and enhance the overall levels of education and awareness.

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### Author's Contribution

All authors equally contributed and revised and approved the version to be published and agreed to be accountable for all aspects of the study.

### Ethical approval

The study was approved by the Medical Ethics Committee of Research Ethical Committee of the Faculty of Medicine in Al Baha University (Ethical approval code REC/SUR/BU-FM/2022/8).

### Informed consent

Written informed consent was obtained from all responders included in the study.

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This study has not received any external funding.

### Conflict of interest

The authors declare that there is no conflict of interests.

### Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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